

C.; Mesquite, Tex. 22d, Walla Walla, Wash. 23d, Charleston, Ill.; Vevay, Ind.; Riddleton, Tenn.; Cleburne, Tex. 25th, Kissimmee, Fla.; Beverly, N.J.; Cleburne, Tex. 27th, Keeler, Cal.; Riddleton, Tenn.; Mesquite, Tex. 28th, Vevay, Ind.; Muscatine, Iowa; North Sutton, N. H.; Carrollton, Ohio. 29th, Red Bluff, Cal.; North Sutton, N. H.; Green Bay, Wis. 30th, Red Bluff, Cal.; Lacon, Ill.; Kalamazoo, Mich. 31st, Spearfish, Dak.

Duck, Ga.; a large meteor was observed at 8 p. m., 11th. It shot across the sky from north to west about 20° above the horizon. Its duration was about six seconds.—*Report of Mr. A. L. Gillespie.*

Mesquite, Tex.: two large meteors were observed near the North star at 8 p. m., 14th. The first one started about 20° south and east of the North star; the second one started about 10° southeast of the North star, and travelled south to a point north and 20° west of Jupiter; this one was very brilliant and left a visible path of sparks. Eight smaller meteors were seen at this observation within a space of forty-five minutes.—*Report of Mr. Silas G. Lackey.*

Walla Walla, Wash.: a brilliant meteor was observed at about 8 p. m., 22d, moving in a southeasterly course toward the earth; before it disappeared it exploded, lighting up the sky like a flash of lightning.—*The Daily Union, Walla Walla, Wash., August 23.*

Red Bluff, Cal.: nine small meteors were observed about 15° north of the zenith, between 1.15 a. m. and 2 a. m., 29th. Their general course was southeast, though a few deflected to

the southwest. Two other small meteors were observed at 1.10 a. m., 30th.

Green Bay, Wis.: a brilliant meteor of a golden color, tinged with red, and accompanied by a luminous trail, about 5° long, was observed at 9.30 p. m., 29th. It started near the zenith, moved in a northeasterly direction, and when about 40° above the horizon broke into numerous fragments. The display lasted about ten seconds.

Spearfish, Dak.: a brilliant meteor was observed at 7.30 p. m., 31st. It shot down from north to south, and when close to the horizon it appeared to explode with a flash like burning powder. Its duration was about three seconds.—*Report of Mr. G. H. Warren.*

MIRAGE.

Mirage were observed as follows: Webster, Dak., 2d; Woonsocket, Dak., 3d, 4th; Hampton, Iowa, 16th.

SAND STORMS.

Winnemucca, Nev., 31st: a gale and sand storm began at 1.05 p. m. and continued until 11.20 p. m.; maximum velocity of the wind forty-four miles per hour from the southwest at 5.35 p. m., and the average velocity during the storm was thirty-two miles per hour. A great deal of electricity was present in the atmosphere during the storm, and a perceptible shock was felt with the finger four inches away from an electric wire. Sand storms were also reported as follows: Wilcox, Ariz., 4th, 9th, 21st; Tuohy's, Cal., 15th; Fresno, Cal., 18th; Dodge City, Kans., 3d; Winnemucca, Nev., 17th, 18th.

VERIFICATIONS.

FORECAST FOR 24 HOURS IN ADVANCE.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

The forecasts for districts east of the Rocky Mountains for August, 1889, were made by Captain H. H. C. Dunwoody, 4th Artillery, Signal Officer and Assistant, and those for the Pacific Coast districts were made at San Francisco, Cal., by 2d Lieutenant J. E. Maxfield, Signal Corps.

Percentages of forecasts verified, August, 1889.

States.		States.	
Maine.....	83.0	Tennessee.....	88.5
New Hampshire.....	83.7	Kentucky.....	88.6
Vermont.....	81.8	Ohio.....	85.7
Massachusetts.....	84.5	West Virginia.....	85.0
Rhode Island.....	86.6	Indiana.....	90.5
Connecticut.....	80.3	Illinois.....	89.8
Eastern New York.....	84.3	Lower Michigan.....	88.6
Western New York.....	84.2	Upper Michigan.....	78.8
Eastern Pennsylvania.....	85.9	Wisconsin.....	87.0
Western Pennsylvania.....	84.8	Minnesota.....	85.7
New Jersey.....	82.6	Iowa.....	86.3
Delaware.....	87.1	Kansas.....	81.0
Maryland.....	89.5	Nebraska.....	85.2
District of Columbia.....	84.8	Missouri.....	88.0
Virginia.....	88.8	Colorado.....	86.6
North Carolina.....	85.4	Dakota.....	89.9
South Carolina.....	88.7	Southern California*.....	86.9
Georgia.....	85.4	Northern California*.....	89.2
Eastern Florida.....	91.4	Oregon.....	88.8
Western Florida.....	82.5	Washington Territory*.....	86.7
Alabama.....	87.6	By elements: Weather.....	88.3
Mississippi.....	93.2	Temperature†.....	83.2
Louisiana.....	88.5	Monthly percentage of weather and	
Texas.....	90.6	temperature combined†.....	86.3
Arkansas.....	86.3		

*In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. †The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10. ‡The forecasts of temperature in districts east of the Rocky Mountains were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day.

CAUTIONARY SIGNALS FOR AUGUST, 1889.

Statement showing percentages of justifications of wind signals for the month of August, 1889:

Wind signals.—(Ordered by Captain H. H. C. Dunwoody.) Total number of signals ordered, forty-six; justified as to velocity, wholly, thirty; justified as to direction, forty-five. Of the signals ordered forty-five were cautionary, of which twenty-nine were justified, and one storm, which was justified. Eighteen were ordered for easterly winds, of which seventeen were justified, and twenty-eight were ordered for westerly winds, all of which were justified. Percentage of justifications, 66.8.

Percentages of local verifications of weather and temperature signals as reported by directors of the various State Weather Services for August, 1889.

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Illinois.....	86.9	86.7	Nebraska.....	90.0	88.6
Indiana.....	89.0	89.0	New Jersey.....	85.1	92.9
Kansas.....	82.1	86.7	New York.....	87.5	88.8
Kentucky.....	79.0	95.0	Ohio.....	92.0	87.0
Michigan.....	81.5	85.7	Pennsylvania.....	84.0	90.0
Minnesota.....	83.0	79.0	South Carolina.....	85.5	89.0

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts are republished from reports for August, 1889, of the directors of the various state weather services:

ALABAMA.

The month just closed has been remarkable for the small amount of rainfall in middle and southern Alabama and the heavy precipitation in northern parts of the state. The average rainfall was 0.80 below the normal. In all portions of the state, except in north Alabama, there has been a deficiency

since the 1st of January, and in many localities the wells are going dry. The temperature was normal. There were no decidedly hot days, and the nights were cool and pleasant.

SUMMARY.

Temperature.—Monthly mean, 76; highest monthly mean, 80, at Citronelle

and Livingston; lowest monthly mean, 71.2, at Valley Head; maximum, 97, at Wiggins, 12th; minimum, 51, at Valley Head, 18th; range for state, 46; greatest local monthly range, 41, at Citronelle; least local monthly range, 16, at Livingston.

Precipitation.—Average for the state, 3.28; greatest, 6.33, at Montgomery; least, 1.39, at Wiggins.

Wind.—Prevailing directions, east and southeast.—*P. H. Mell, Signal Corps, Auburn, director.*

ARKANSAS.

SUMMARY.

Temperature.—Average monthly mean, 76.5; highest monthly mean, 81, at Paris, Tex.; lowest monthly mean, 73.6, at Forrest City; maximum, 101, at Lead Hill, 10th and 28th; minimum, 52, at Hot Springs, 30th; range for state, 49; greatest local monthly range, 44, at Hot Springs; least local monthly range, 19, at Dallas.

Precipitation.—Average for the state, 2.05; greatest monthly, 4.65, at Lead Hill; least monthly, trace, at Dallas.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; W. U. Simons, Sergeant, Signal Corps, assistant.*

COLORADO.

SUMMARY.

Temperature.—Monthly mean, 64.9; highest monthly mean, 76.8, at Julesburg; lowest monthly mean, 42, at Dolly Varden Mine; maximum, 105, at Delta, 14th; minimum, 25, at Breckenridge, 23d; range for state, 80.

Precipitation.—Average for the state, 1.51; greatest monthly, 3.45, at Alma; least monthly, 0.41, at Monte Vista.—*Prof. F. H. Loud, Colorado Springs, director; T. W. Sherwood, Sergeant, Signal Corps, assistant.*

DAKOTA.

High winds, high temperature, and a deficiency of precipitation seriously injured all late crops.

SUMMARY.

Temperature.—The average temperature, 71.6, was about 4.5 above the normal; highest monthly mean, 77, at Napoleon; lowest monthly mean, 66, at Saint Vincent, Minn.; maximum, 110, at Steele, 27th; minimum, 32, at Saint Vincent, Minn., 4th; greatest daily range, 52, at Steele, 4th; least daily range, 4, at Gallatin, 2d; mean monthly range, 29.

Precipitation.—Average, 1.35, which is about 1.20 below the normal; greatest monthly, 3.81, at Alexandria; at Clarke no precipitation was reported; greatest rainfall in twenty-four hours, 2.75, at Alexandria, 18th.—*S. W. Glenn, Sergeant, Signal Corps, Huron, in charge.*

ILLINOIS.

SUMMARY.

Temperature.—Monthly mean, 71.7; highest monthly mean, 76.4, at White Hall; lowest monthly mean, 67.2, at South Evanston; maximum, 98, at Dwight, Mount Morris, Oneida, Pontiac, and Quincy, on the 29th, and at Winnebago, 30th; minimum, 45, at Dwight and South Evanston, 6th.

Precipitation.—Average for the state, 1.25; greatest, 3.59, at Jordan's Grove; least, 0.08, at Pana.

Wind.—Prevailing direction, southeast.—*John Craig, Sergeant, Signal Corps, Springfield, in charge.*

INDIANA.

SUMMARY.

Temperature.—Exceedingly cool temperature prevailed throughout the month, especially during the nights, except during the last few days when, on the 31st, the maximum 90°, and slightly above, was recorded at most stations; the lowest temperature occurred at different stations on different dates. The mean temperature for the month was 2.4 below the normal for eighteen years, and 1.2 below that for seven years; the greatest deficiency, 2.4, was noted in the southern portion, and the least, 1.0, in the northern, while the deficiency in the central portion, 1.3 differed only slightly from the latter. The mean for August is the lowest on record for Indiana, except that of 1885, 70.4, and that of 1875, 70.2, which were nearly equal to it. In Whitley county, in the northern portion of the state, it is reported that very light hoar-frost formed on the morning of the 17th.

Precipitation.—August, 1889, was an exceedingly dry month. The average amount of precipitation for the state differed, 2.02, from the normal for seven years, and the deficiency at various stations ranged from 1.23 to 4.41, except at La Fayette, where an excess of 0.67 above the normal for ten years occurred. The greatest deficiency occurred in the central portion, and the least is noted in the northern portion. The least amount of precipitation, 0.02, was measured at Vevay. No strong or destructive winds occurred during the month. Because of the insufficiency of precipitation, and continued dry weather, corn and pastures are suffering, and plowing delayed, the ground being too hard and dry for these operations.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.*

IOWA.

August, 1889, averaged nearly normal in temperature, and was clear and dry; southerly winds and calms prevailing. The mean temperature was 0.2 above the normal. The temperature was unequally distributed during the month, the first half being decidedly cold, averaging 4 below the normal, while the last half was markedly hot, being 4 above the normal. The hottest spell comprised the last five days of the month, and averaged 11 above the normal,

making it by far the hottest spell of the season. The number of hot days on which the temperature reached or exceeded 86° was nine, all occurring in the second half of the month.

The total rainfall has been very light throughout the state, averaging about one-third of the normal amount. It was greatest, and generally 2.00, in a belt extending from Page and Harrison counties in the southeast to Hancock and Mitchell counties in the north. The rainfall was least, and did not reach 1.00, in an irregular belt from Wayne and Lucas counties in the south over Henry, Washington, Louisa, Jackson, and Buchanan counties to Howard county in the northeast; in the northwest the total rainfall was also less than 1.00. In parts of the state not specified the rainfall averaged about 1.50. Nearly all the rain fell during the first half of the month, the latter half being almost destitute of measurable rainfall. The most extended and abundant rainfall occurred on the evening of the 8th into the morning of the 9th, with heavy thunder and lightning extending from central Iowa to the northeast; during this storm the lightning did considerable damage, and hail fell in Allamakee county. No destructive wind occurred. Rain fell in the state during the month on fifteen days, and it was general over half of the state on the 8th, 12th, and 20th; on the last two of these dates the rain was very light. The protracted and high temperature during the last half of the month, combined with the absence of rain, has hastened the ripening of corn, but it will also notably diminish its yield.—*Dr. Gustavus Hinrichs, Iowa City, director.*

IOWA WEATHER CROP BULLETIN SERVICE.

The temperature during the first ten days of the month was considerably below the normal, bringing light frosts on the 5th. During the latter part of the month, especially from the 28th to the 31st, the temperature was exceedingly high. The 29th and 30th were the warmest days during the past summer. The precipitation was generally below the normal. During the first ten days, however, numerous and well-distributed showers occurred. During the last half of the month there was but little rainfall. The cool weather in the early part of the month checked the growth of corn, and the dry, hot weather of the last fifteen days hastened its maturity, thus relieving it of the danger of damage by frost. The dry weather has seriously affected pastures, which are reported from many points as being parched.

SUMMARY.

Temperature.—Monthly mean, 71.5; highest monthly mean, 76.3, at Glenwood; lowest monthly mean, 66.4, at Jefferson; maximum, 104, at Blakeville, 30th; minimum, 37, at Fayette, 5th; average maximum, 93; average minimum, 51.3; greatest local monthly range, 60, at Fayette; least local monthly range, 24, at Independence; monthly range for the state, 67; average monthly range, 41.9.

Precipitation.—Average for the state, 1.48; greatest, 3.14, at Logan; least, 0.12, at Bancroft.

Wind.—Prevailing direction, south.—*G. M. Chappel, Sergeant, Signal Corps, Des Moines, in charge, Iowa Weather Crop Bulletin Service.*

KANSAS.

SUMMARY.

Temperature.—The temperature is deficient in the eastern half of the state. In the eastern division this deficiency amounts to 2.5, and diminishes as the central tier of counties is approached, being but 0.8 to 0.9 in the line of counties from Republic to Sumner. It is about normal from Smith to Barber, while west of this tier there is an excess which in Ford amounts to 1.6. The mean temperature for the western division is 78.6; for the middle, 75.8; and for the eastern division, 73.9; while for the state it is 76.1.

Precipitation.—The average for the western division is 2.60; for the middle division 2.50, and for the eastern division 3.41. The largest monthly rainfall occurred in contiguous portions of Douglas, Jefferson, and Leavenworth, where it is 8.00 and over. It rapidly diminishes from Douglas south, and is less than 1.00 in Cherokee, Crawford, Neosho, Labette, Wilson, Montgomery, east half of Chautauqua, and south half of Woodson. West of these counties the rainfall increases to 4.00, and over, in the contiguous portions of Elk, Butler, Cowley, Sedgwick, Sumner, Kingman, Harper, and southeastern part of Reno. West of Jefferson the rainfall diminishes to less than 3.00 in the western half of Pottawatomie, and in Riley and Clay, and to less than 2.00 in Dickson and the contiguous portions of Morris and Marion; it then increases to nearly 5.00 in Cloud, diminishes to less than 1.00 in the adjacent portions of Graham, Sheridan, Trego and Gove, and then increases to 4.00 and upward in Logan and east half of Wallace, which increase extends northeastward through Thomas and Decatur. In the south the rainfall diminishes from 4.00 in the eastern portions of Harper and Kingman, and southeast corner of Reno, to less than 1.00 in the northwestern part of Reno, western halves of Rice and Ellsworth, southeast corner of Russell, in Barton, Strafford, Pratt, and eastern portions of Kiowa, Edwards and Pawnee, and then increases to 3.00, and upwards, from the southwest portion of Ellis, southwestward through Hamilton, with a belt of 4.00 through the central portion of Kearney, Finley, and Garfield into the southwest part of Ness.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.*

KENTUCKY.

SUMMARY.

Temperature.—The average temperature of the state, as deduced from the tri-daily observations, was 72.1; from the mean of the average maximum and minimum temperatures, 70.6. These figures are from 4 to 6 less than the normal for the month. The highest temperature recorded during the month

was 100, at Murray, 26th; the lowest, 50, at Shelbyville, 16th. The warmest days were the 26th and 31st, and the coolest the 15th and 16th. The temperature was markedly uniform throughout the month, the average monthly range being 34.9; the greatest, 46, at Murray, and the least, 21, at Bernstadt.

Precipitation.—The average rainfall for the state was 1.23, which is about 2.25 less than the normal amount. Little or no rain fell from August 10th to September 1st, and the drought had, on the latter date, assumed an alarming aspect, especially in the central and northern portions of the state. The greatest monthly rainfall reported was 2.58, at Bowling Green, and the least, 0.23, at Louisville. At the latter place the amount of rainfall from January 1st to August 31st was 12.24 less than the normal; a deficiency of about 31 per cent. The average number of rainy days during the month was 4; cloudy, 5; partly cloudy, 11, and cloudless, 17.—*Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps, assistant.*

LOUISIANA.

The month was in decided contrast to August, 1888, when the sunshine amounted to but 33 per cent., and when the rainy days numbered as high as 25 at certain stations. The average sunshine for the state during the past month was 66 per cent., and the average number of days on which appreciable rain fell was but eight. There was no excessive heat, no damage from drought, heavy rain, or high winds.

SUMMARY.

Temperature.—Monthly mean, 79.1; highest monthly mean, 84.0, at Lake Charles; lowest monthly mean, 73.4, at Clinton; maximum, 101, at Cameron, 14th; minimum, 53, at Saint Joseph, 18th; range for the state, 48; greatest local monthly range, 41, at Liberty Hill; least, 21, at Shell Beach; mean daily range, 20.7.

Precipitation.—Average for the state, 3.55; for the northern section, 1.45; southern section, 5.25; greatest local monthly rainfall, 8.36, at Hammond; least, 0.05, at Minden.

Wind.—Prevailing direction, southeast.—*R. E. Kerkam, Sergeant, Signal Corps, New Orleans, in charge.*

MICHIGAN.

The features of the month were the continued low night temperatures, which resulted in frosts on the 10th and 11th of the month, and the light rainfall for the month, this month being the driest of any on the records of the last fourteen years.

SUMMARY.

Temperature.—The mean temperature for the month, 66.7, is 1.7 below the normal of fourteen years. The temperature was above the normal on ten days, normal on one, and below the normal on twenty days. The last week of the month was the warmest. The highest mean daily temperature, 78, occurred on the 20th, when the temperature was 3 above the normal, and the lowest, 60, occurred on the 11th, when the temperature was 9 below the normal. The highest mean daily temperature in the past fourteen years, 81, occurred on the 13th, 1876, and the lowest, 53, on the 26th, 1885 and 1887. The highest mean monthly temperature, 73.2, occurred in 1876, and the lowest, 63.0, in 1885. The maximum temperature of the month, 98, occurred on the 30th, at Deer Lake. The lowest temperature, 31, occurred on the 11th, at Grayling. Frost was reported on the 5th, 6th, 7th, 9th, 10th, 11th, and 14th in the different sections of the state, but no material damage was done, except nipping some vines on the lowlands.

Precipitation.—The average rainfall for the state, 1.01, is 2.19 below the average of fourteen years. The rainfall was below the average in all sections, ranging from 0.52 in the upper peninsula to 2.73 in the central section. The average total rainfall for the lower peninsula was 0.79, which is 2.41 below the average. No county south of the straits received an average amount of rainfall during the month, and the rainfall for this month is the least amount on the records of this service. The following stations report an amount smaller in other years than is recorded this year: Grand Haven, 1883; Alpena, 1878; Marquette, 1873; Marshall, 1888. The average number of days on which 0.01 inch or more of rain fell is 4.7, while there were nineteen days in the upper peninsula, fifteen days in the northern section, thirteen in the central section, and eight in the southern section, thus showing the local character of the rainfall during the present month. The largest amount of rainfall recorded during the month, 4.44, was reported at Calumet, and the least, 0.07, at Ovid, being a difference of 4.37 between the greatest and the least. The same peculiarity was manifested in August, 1888, when the drought was prevailing, the largest rainfall for the month, 7.37, was recorded at Big Rapids, and the least, 0.10, was recorded at Cassopolis.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Sergeant, Signal Corps, Lansing, director.*

MINNESOTA.

The mean temperature for the month was 2 above the August normal of eight to eighteen years. Although the first light frost of the season occurred earlier than usual (August 4th at Moorhead and Saint Vincent), the month was the warmest August in Minnesota since 1882. The average precipitation was 0.43 in excess of the normal. There was less than one-half the usual amount of rainfall in the western part of the state, the deficiency extending northward from Moorhead to Saint Vincent, where, at the latter-named station, the shortage was 16 per cent. The rainfall was normal and slightly above in the central and southeastern counties, while in the vicinity of Lake Superior it was double the usual quantity for August. The weather was generally favorable to all crops in the state, as is shown by the bountiful harvests.

SUMMARY.

Temperature.—Monthly mean, 68.4; highest monthly mean, 71.8, at Brainard; lowest monthly mean, 63.2, at Pokegama Falls; maximum, 99, at Grand Meadow and Saint Charles, 30th; minimum, 32, at Saint Vincent, 4th; range for state, 67; greatest local monthly range, 63, at Saint Vincent; least local monthly range, 35, at Lake Winnibigoshish; greatest daily range, 45, at Saint Vincent, 30th; least daily range, 5, at Duluth, 23d.

Precipitation.—Average for the state, 3.66; greatest, 7.87, at Duluth; least, 0.59, at Bowling Green.

Wind.—Prevailing direction, south.—*John Healy, Private, Signal Corps, Saint Paul, in charge.*

MISSISSIPPI.

SUMMARY.

Temperature.—The normal temperature for the state in August is 80; the mean for this August was 78.3, nearly 2.0 below the average. The mean daily temperature was below the normal on the 1st, rose to 2.0 above the normal on the 4th, continued about the normal from the 5th to the 10th, then gradually rose to 84 on the 15th, the warmest period of the month. A rapid fall to a mean of 73 occurred between the 15th and 18th. Throughout the central and southern parts of the state the temperature remained nearly normal from the 19th to the 22d, when it fell below the normal and continued so until the end of the month, averaging about 75 on the 31st. The daily range of temperature was quite uniform, being in value between 16 and 20 on 27 days in the month. There was a large amount of sunshine, the effects of which were somewhat counteracted by clear skies at night. The mean temperature was barely sufficient for the proper maturing of the cotton crop. The greatest local monthly range was at Columbus, from 104 on the 11th to 60 on the 17th, and the least at Pearlinton, from 91 on the 15th to 71 on the 30th. The highest monthly mean was at Columbus, 80.9, and the lowest at Corinth, 75. The highest and lowest temperatures recorded were at Columbus and Corinth, respectively.

Precipitation.—The average number of days on which rain fell was six, the actual number varying from thirteen at Logtown to one at Kosciusko. The average rainfall over the state was 2.71, being 1.25 less than the normal amount for August, 3.96. The deficiency in rainfall since January 1st is thus increased to 9.08. The heaviest rainfalls occurring in 24 hours were at University, 3.12, in 20 hours, 31st; at Logtown, 2.55, from 1 to 2 p. m., 15th; at Pearlinton, 3.74, from 12.30 to 1.30 p. m., 15th. Other heavy rains fell, as follows: Meridian, 1.84, on the 5th; Pontotoc, 1.73, on the 3d; Logtown, 1.65, on the 9th, from 2 p. m. to 2.30 p. m.; Pearlinton, 1.90, on the 5th; Agricultural College, 1.78, on the 31st.

Wind.—Prevailing direction, east or southeast.—*R. B. Fulton, Signal Corps, University, director.*

MISSOURI.

SUMMARY.

Temperature.—The mean temperature for August was 73.6. The highest temperature reported was 101, at Protem, and the lowest, 52, at Ozark. The average of maximum temperatures was 92.7, and the average of minimum temperatures was 57.7, making an average range of 35. The highest temperatures occurred on the 9th, 28th, 29th, and 30th, and the lowest on the 2d, 4th, 5th, 6th, 10th, 15th, 21st, 22d, 23d, 25th, and 26th.

Precipitation.—The average precipitation was 1.99, which was 0.85 below the August normal. The greatest amount of precipitation reported was 7.09, at Leavenworth, Kans., and 5.25, at Langdon, and the least, 0.10, at Ironton, and 0.30, at Kirksville. In the state, as a whole, precipitation occurred on fourteen days. The greatest number of days of precipitation in any one place was seven at Conception, Kansas City, Oregon, and Ozark.—*Prof. Francis E. Nipher, Saint Louis, director.*

NEBRASKA.

The month of August has been rather cool and cloudy, with a fair amount of rainfall over the state generally, and a very heavy precipitation in the extreme southeast.

SUMMARY.

Temperature.—The mean for the month in southeastern Nebraska was 72.8, which is about 1 below the normal; maximum, 105, at Kimball; minimum, 40, at Fort Robinson. This maximum is an unusual one for August, but the minimum in 1888 was 34, and in 1887, 38.

Precipitation.—The greater part of the state has had between one and two inches of rain; the extreme northwest over 3, and the region from the Blue River to the Missouri generally over 6, reaching a maximum of 12.10 at Tecumseh. The number of rainy days, however, was below the normal in the southeastern part of the state, and indeed over the state generally, the rainfall occurring mostly in one heavy rain throughout the southeast. The month has been favorable for crops generally.—*Prof. Goodwin D. Swcezy, Crete, director; G. A. Loveland, Corporal, Signal Corps, assistant.*

NEVADA.

SUMMARY.

Temperature.—The temperature during the past month was about normal. The mean temperature for the state, 73.2, is only 0.9 lower than that of the same month last year. The atmosphere was generally smoky and hazy all through the month. The hottest monthly mean temperature, 95.5, is that of El Dorado Canyon, and the coldest monthly mean, 62.0, at Ely. There were two warm periods, the first from the 1st to the 3d, and the second from the

14th to the 16th. The majority of the lowest temperatures recorded occurred during the cold period of the 18th to the 20th. The highest maximum temperature for the state, 117.3, occurred at El Dorado Canyon, and the lowest minimum, 29.0, occurred at Elko, 29th. The range for the state is 88.3.

Precipitation.—The disastrous drought was broken in portions of Eureka and Elko counties, in Esmeralda, Nye, White Pine, and Lincoln counties, but still continues in other counties. Rain fell at 13 out of a total of 28 stations, with an average rainfall for the state, this year, of 1.06, which is 0.45 more than that of the same month in 1888. Thunder-storms were frequent at Belmont, Nye Co., and Pioche, Lincoln Co., and were attended with heavy rainfall. Frosts occurred at Crane's Ranch and at Ruby Hill on the 20th, and at Pioche on the 29th, doing little damage. The supply of water for irrigation and milling purposes is short all over the state.—*Prof. Chas. W. Friend, Carson City, director; H. F. Alciatore, Private, Signal Corps, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

The weather in New England during August was remarkable for several peculiarities, the most noticeable of which was the distribution of rainfall. There was a deficiency of about two inches in the northern part of the district, although rain fell on a greater number of days there than in the southern part; in southern New England the amount was about normal, 4.50, and all but a very small part of it fell on five days, the 1st, 3d, 5th, 9th, and 14th. After a period of frequent rainfalls during the first fifteen days a dry spell set in on the 16th and continued for the remainder of the month, broken only by a few scattered showers of light rain in the three northern, and light general rains on the 23d and 24th in the three southern states.

SUMMARY.

Temperature.—Monthly mean, 66.2 (104 stations); highest monthly mean, 70.2, at Holyoke; lowest monthly mean, 58, at West Jonesport; maximum, 94, at Lunenburg, 28th; minimum, 35, at Berlin Falls, 8th; range for New England, 59; greatest local monthly range, 52, at Berlin Falls; least local monthly range, 21, at Nantucket; greatest daily range, 43, at Jacksonville, 28th; least daily range, 0, at Long Plain, 3d. The average temperature for August for 22 stations, having records for more than ten years, is 67.9; the average for August, 1889, is 66.1; departure, -1.8.

Precipitation.—Average for New England, 3.72 (123 stations); greatest, 11.05, at Nantucket; least, 1.00, at Berlin Mills. The average precipitation for August for 31 stations, having records for more than ten years, is 4.19; the average for August, 1889, is 3.74; departure, -0.45; 5.53 fell at Nantucket on the 14th.

Wind.—Prevailing direction, southwest (24 stations).—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; L. G. Schultz, Sergeant, Signal Corps, assistant.*

NEW JERSEY.

SUMMARY.

Temperature.—The mean temperature for August, 1889, 69.6, is 2.4 below the normal for the month and 2.9 below the average for the corresponding month of 1888. The warmest days of the month were the 2d, 8th, 9th, 20th, and 21st, when temperatures ranging from 84 to 95 were recorded. The coolest days were the 12th, 13th, 15th, 16th, 17th, 18th, 27th, 28th, and 30th, the temperature ranging between 45 and 58.

Precipitation.—The average precipitation for the state, 5.18, is 0.44 above the normal and 0.95 below the average for the corresponding month of 1888. One station reports a total exceeding 9.00; four exceeding 7.00; two exceeding 6.00; nine exceeding 5.00; nine exceeding 4.00; four exceeding 3.00, and one exceeding 1.00.

Wind.—Prevailing directions, southeast and southwest.—*Prof. George H. Cook, New Brunswick, director; E. W. McGann, Sergeant, Signal Corps, assistant.*

NEW YORK.

SUMMARY.

Temperature.—The highest temperature reported was 90, on the 21st, at New York City and Geneva; the lowest, 34, on the 29th, at Middleburgh. The mean temperature for the state was 65.2; the 21st being the hottest, and the 15th the coldest day. The greatest local monthly range of temperature was 54, at Middleburgh; the least, 12.7, at Setauket. The temperature was generally below the normal, excepting at Buffalo, Humphrey, and Setauket, where it was slightly above. Frost was reported on the 8th, 10th, 11th, 12th, 27th, 29th.

Precipitation.—Average for the state, 2.59. The rainfall was generally below the average, excepting at Friendship where it was 0.82, Rondout 0.15, Setauket 0.70, White Plains 0.11, and Albany 0.31, above. The greatest monthly rainfall was 4.78, at White Plains; the least, 0.64, at Eden Centre.

Wind.—Prevailing direction, southwest.—*Prof. E. A. Fuertes, Ithaca, director; I. W. Brewer, Private, Signal Corps, assistant.*

NORTH CAROLINA.

SUMMARY.

Temperature.—Monthly mean, 73.7; normal for August, 75.8; departure from the normal, -2.1; maximum, 96.0, at Kitty Hawk, 22d; minimum, 44.0, at Highlands, 17th; range for state, 52.0; highest monthly mean temperature, 76.6, at Kitty Hawk; lowest monthly mean, 62.0, at Highlands; average monthly range, 30.1; greatest monthly range, 38.0, at Clarkton; least monthly range, 17.0, at Hatteras.

Precipitation.—Average for the state, 5.84; normal for August, 5.61; departure from the normal, -0.27; greatest monthly, 9.40, at Washington; least monthly, 2.89, at New Berne. The rainfall was in excess in the eastern portion of the state, and deficient in the western portion. Rainfall of two inches or more, in twenty-four hours, occurred as follows: Hatteras, 2.87, 3d; Fayetteville, 2.21, 26th; Winslow, 2.00, 27th; Clarkton, 2.50, 27th; Raleigh, 2.15, 5th; Washington, 2.29, 3d.

Wind.—Prevailing direction, southwest. Average wind direction for August, from many years observation, southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Hermann, Sergeant, Signal Corps, assistant.*

OHIO.

SUMMARY.

Temperature.—The mean temperature of the northern section was 67.7; of the middle section, 68.8; of the southern section, 70.7, and of the state, 69.1. These means are 0.5, 1.1, 0.9, and 0.8 below the seven-year averages for the sections and state for August. The maximum temperature, 99.5, occurred at Georgetown on the 31st, and the minimum, 40, at Ohio State University on the 15th. The monthly range of temperature was 23.3. The greatest daily range was 41.4, at Wauseon, 30th, and the smallest, 5.5, at Hiram, 9th.

Precipitation.—Precipitation was general in all sections on the 4th, 13th, and 14th; in the northern and middle sections on the 2d and 9th, and in the southern section on the 10th. Local rains occurred in all sections on the 5th, 16th, and 21st, and in the southern section on the 22d. The mean rainfall in the northern section was 1.88; in the middle section, 1.58; and in the southern section, 1.05. These means are 0.82, 1.76, and 2.45 below the averages for the sections for August. The mean for the state, 1.50, is 1.68 below the average for the past seven years, and is the smallest August rainfall since 1884. The deficiency in rainfall to September 1st amounts to 1.96 in the northern section, 6.05 in the middle section, and 7.42 in the southern section. The deficiency for the state is 5.14.

Light frost was reported at Poland on the 12th.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; Lieut. Charles E. Kilbourne, secretary; C. M. Strong, Corporal, Signal Corps, assistant.*

PENNSYLVANIA.

SUMMARY.

Temperature.—The mean temperature was 67.4, which is 2.0 below the corresponding month of 1888, and about 3.0 below the normal. The greatest departures were in the agricultural districts of the Lehigh, Cumberland, and Lebanon valleys. The following reports show the highest temperatures recorded during the month: Tionesta, 100; Carlisle 95; Girardville, 95. The lowest were: Columbus, 37; Wellsborough, 38; Greenville, 38.7; and Honesdale, 39. At most stations the warmest days of the month were the 21st and 31st, and the coldest the 12th. Stations with the highest monthly mean temperature were: Carlisle, 72.9; Philadelphia, 72.8; Pottstown, 72.0; and Selin's Grove, 71.8. The lowest monthly mean temperatures were: Dyberry, 61.2; Honesdale, 62.0; and Philipsburgh, 62.0.

Precipitation.—The average rainfall for the state during the month was 3.24. Considered as a whole, this is about normal, but the distribution was very uneven, and some parts of the state suffered from drought. The following are the greatest monthly totals: Philadelphia, 7.07; Catawissa, 6.17; Girardville, 6.03; Pottstown, 5.05; West Chester, 4.43; Reading, 4.46. The least were: Wellsborough, 0.83; Charlesville, 1.06; Hollidaysburgh, 1.37; Altoona, 1.52; and Pittsburgh, 1.88. With but few exceptions, very little rain fell after the middle of the month. Up to this time showers were frequent.

Wind.—Prevailing direction, west.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant.*

SOUTH CAROLINA.

SUMMARY.

Temperature.—The monthly mean, 74.4, is 2.3 above the normal of the last three years. Highest monthly mean, 79.0, at Hardeeville; lowest monthly mean, 68.6, at Brewer Mine; maximum, 97.0, at Chester, 6th; minimum, 45.0, at Brewer Mine, 27th; range for state, 52.0. In most instances the maximum temperature occurred on the 10th and 11th, and the minimum temperature on the 19th.

Precipitation.—The average for the state, 6.37, is 0.56 above the average of the last three years. Greatest monthly, 11.89, at Florence; least monthly, 1.73, at Yorkville; greatest daily, 3.74, at Winnsborough, 2d. Average number of rainy days, 12.3.

Wind.—Prevailing direction, southeast.—*Hon. A. P. Butler, Columbia, director; H. C. Seymour, Private, Signal Corps, assistant.*

TENNESSEE.

The month was devoid of any special meteorological features. With the exception of the slightly low ranges of temperatures, the conditions were generally near the normal for the month.

SUMMARY.

Temperature.—The mean temperature was 73.8, a little below the normal for the past seven years, and the lowest August mean during the period, except in 1883 and 1884. The highest monthly mean was 82.3, at Bolivar, and the lowest was 68.2, at Fostoria. The highest temperature observed was 96, on the 21st, at Bolivar, and was the lowest August maximum noted during the past seven years, the next lowest being 98, in 1883. The lowest tempera-

ture observed was 51, on the 16th, at Andersonville. This was the highest August minimum reported during the period named, except 52, in 1886. The highest temperature was recorded generally on the 20th, 21st, and 22d in the eastern division; on the 9th, 10th, and 21st in the middle division, and on the 14th in the western division. The lowest temperature was generally recorded on the 16th and 17th. The daily ranges of temperature were about the normal.

Precipitation.—The average depth of rainfall was 3.37, a little less than the August average for the past seven years. Of this amount the eastern division received an average of nearly 4.00; the middle division nearly 3.50, and the western division nearly 2.75. Rains were variously reported throughout the state on twenty-three days, and on six of these, viz., 4th, 11th, 13th, 14th, 22d, and 31st, the rains were general. The day of the greatest rainfall was the 14th. The rains were generally pretty well distributed, and only a few heavy local daily falls were reported. Those measuring over 2.00 were: 2.20, on the 5th, at Cog Hill; 2.01, on the 3d, at Rugby; 2.60, on the 11th, at Ashwood; the greatest during the month, 2.27, on the 14th, at Hohenwald; 2.45, on the 14th, at Savannah; and 2.33, on the 31st, at Memphis. Many of the rains were light and local in character. There were eight days on which no measureable rainfall was noted. During the latter half of the month until the 31st there was but little rainfall noted, and of this period, five days, 16th to 20th, inclusive, were rainless. The greatest monthly rainfall was 7.35, at Clinton. Other large monthly amounts are noted, as follows: 6.42 at Knoxville, 5.12 at Rugby, 5.86 at Lewisburgh, 6.70 at Ashwood, 6.65 at Hohenwald, 5.62 at Memphis, and 5.60 at Strawberry Plains. The least monthly rainfall was 0.56, at McKenzie. This was the least August rainfall during the past seven years, except in 1883, when only 0.03 was reported, also at McKenzie. Most of the rains during the month were accompanied by electrical disturbances, some of them quite severe, but with no very high winds.

Wind.—Prevailing direction, south and southwest.—J. D. Phunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.

TEXAS.

SUMMARY.

Temperature.—Over the Pan Handle and the extreme western portion of the state the mean temperature for the month was about 2 above the normal. Over the eastern portion of the state the temperature was about normal, while in the southwestern portion the mean for the month was about 1 below the normal, except at Brownsville, where the normal prevailed. The greatest excess in temperature occurred at Silver Falls, where the mean was 7 below the normal for the month, and the greatest deficiency at Corpus Christi, where the mean was 2 below the normal for the month. Monthly mean temperature for the state, 81; highest maximum, 104, at Pecos City, 16th and 17th; lowest minimum, 41, at Hartley, 12th. There were two warm periods, one from the 1st to 3d, and the other from the 14th to the 17th; two cool periods, one from the 9th to 12th and the other from the 24th to 27th.

Precipitation.—The rainfall during the month was very unevenly distributed over the state, and was generally from one to two inches below the normal, except along the eastern half of the coast, and in the vicinity of San Antonio, New Brannfels, La Grange, Dallas, and Brownsville, where an excess is reported. Over about one-third of the agricultural portion of the state the total rainfall during the month was less than one-half inch.—D. D. Bryan, Galveston, director; I. M. Cline, Sergeant, Signal Corps, assistant.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, August, 1889.

Stations.	Temperature. (Fahrenheit.)			Precip'n.		Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.				Max.	Min.	Mean.	
Alabama.	0	0	0	Ins.		Arizona—Cont'd.	0	0	0	Ins.
Bermuda f.....	90	63	75.4	0.24		Fort Apache.....	96	52	74.1	2.62
Citronelle f.....	96	55	80.0	2.08		Fort Bowie.....	97	52	77.7	0.35
Columbian f.....	92	58	75.4	3.83		Fort Huachuca.....	95	57	76.9	1.80
Decatur (1) f.....	92	56	76.0	3.88		Fort Lowell.....	108	56	86.4	2.07
Decatur (2) f.....	92	56	76.0	4.91		Fort McDowell.....	117	71	92.3	0.29
Eufaula.....	94	62	77.2	1.97		Fort Mojave.....	116	67	93.8	0.74
Evergreen f.....	96	61	78.9	2.05		Fort Verde.....	106	62	83.4	0.75
Fort Deposit f.....	95	61	78.2	5.03		Gila Bend.....	111	78	96.1	1.03
Livingston (1) f.....	89	72f	79.9h	2.35		Globe.....	102	65	83.7	1.19
Livingston (2) f.....	92	58	77.4	1.67		Holbrook.....	99	59	79.2	1.20
Marion f.....	94	56	75.2	2.28		Lochiel.....	94	67	76.0d	1.67
Motest.....	96	61	77.4	2.00		Maricopa.....	115	70	92.8	0.90
Mt. Vernon B'ks.....	96	61	79.0	1.13		Mount Huachuca.....	109	62	80.8	0.54
Opelika f.....	96	62	76.8	2.03		Pantano.....	105	71	87.2	2.42
Pine Apple.....	94	56	76.7	0.23		Prescott Junction.....	104	46	75.6	2.77
Selma f.....	95	62	79.7	7.45		San Carlos.....	111	65	86.9	0.65
Scottsborough f.....	94	60	77.4	1.32		San Simon.....	110	70	81.5	0.50
Tuscumbia f.....	92	56	75.6	1.99		Signal.....	112	73	91.8	0.98
Valley Head f.....	90	51	71.2	3.45		Strawberry.....	.....	.....	.....	1.41
Wiggins h.....	97	60	81.0	1.01		Teavison.....	.....	.....	.....	0.10
Arizona.						Tip Top.....	.....	.....	.....	1.17
Antelope Valley.....	.....	.....	.....	2.29		Tombstone.....	98	63	77.9	2.03
Ash Creek.....	.....	.....	.....	0.47		Tucson (1).....	104g	.....	.....	2.06
Ash Canyon.....	.....	.....	.....	0.20		Tucson (2).....	106	85	93.5	1.00
Banghart's.....	104	.....	.....	2.40		Volunteer Springs.....	99	40	68.8	0.70
Benson.....	101	74	87.6	0.94		Williams.....	89	40	63.8	4.00
Bisbee.....	.....	.....	.....	0.73		Willow Springs.....	.....	.....	.....	2.41
Buckeye.....	.....	.....	.....	0.51		Winslow.....	97	52	75.6	1.10
Casa Grande.....	114	79	93.7	0.00		Yuma.....	108	86	94.3	0.06
Cedar Springs.....	.....	.....	.....	3.60		Arkansas.				
Cooley's Springs.....	.....	.....	.....	2.95		Arkansas City f.....	.....	.....	.....	1.86
Curtis.....	.....	64	72.3	5.42		Camden f.....	92	61	79.0	1.51
Flagstaff.....	89	46	66.5	0.65		Conway.....	92	61	75.3	2.12

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.		Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.				Max.	Min.	Mean.	
Arkansas—Cont'd.						California—Cont'd.				
Dallas †.....	89	70	80.4	Ins.		Los Angeles.....	104	60	73.5	0.00
Dardanellet.....	.....	.....	.....	2.85		Los Banos.....	111	63	82.3	0.00
Dayton †.....	95	62	77.2	2.02		Los Gatos.....	97	55	70.6	0.00
Devall's Bluff †.....	96	54	74.0	4.60		Mammoth Tank.....	119	81	98.8	0.00
El Dorado †.....	89	53	74.7	1.11		Martinez.....	86	56	70.0	0.00
Forrest City †.....	92	56	75.5	3.45		Marysville.....	96	60	78.8	0.00
Heber.....	96	57	73.6	1.88		Menlo Park.....	88	50	67.9	0.00
Helena (1) †.....	.....	.....	.....	2.14		Merced.....	108	58	81.5	0.00
Helena (2) †.....	94	58	77.1	2.50		Modesto.....	105	65	81.1	0.00
Hot Springs.....	96	52	75.5	2.05		Mojave.....	108	67	86.5	0.81
Lead Hill.....	101	59	77.1	4.65		Montague.....	100	74	86.4	0.00
Little Rock B'ks.....	97	59	77.6	2.66		Monterey.....	77	57	64.4	0.00
Lonoke.....	93	62	78.2	3.37		Monterey (Hotel)	.....	.....	.....	.....
Malvern.....	98	52	77.3	.....		del Monte.....	78	50	62.5	0.00
Monticello †.....	94	62	78.2	1.88		Mount Hamilton.....	92	51	70.4	0.00
Newport (1) †.....	.....	.....	.....	5.55		Napa.....	90	50	65.9	0.00
Newport (2) †.....	94	58	75.8	2.22		National City †.....	96	60	72.3	0.09
Osceola †.....	94	58	73.7	2.64		Needles.....	117	70	97.0	1.27
Ozone †.....	87	60	73.8	3.29		Newark.....	88	56	68.6	0.00
Pine Bluff †.....	94	62	78.6	2.06		Newhall.....	110	55	79.2	0.36
Prescott †.....	92	62	77.6	0.23		Newman.....	107	60	82.7	0.00
Russellville †.....	96	59	77.0	3.30		Niles.....	92	49	68.0	0.00
Stuttgart.....	93	57	75.8	1.80		Norwalk.....	99	60	73.5	0.00
Texarkana.....	98	60	80.2	0.08		Oakland (1).....	79	51	61.0	0.00
Washington †.....	94	58	77.2	1.30		Oakland (2).....	74	54	61.1	0.00
Winslow.....	87	55	72.9	1.41		Orland.....	105	62	84.5	0.00
British Columbia.						Oroville.....	99	58	79.4	0.00
New Westminster.....	84	48	61.8	3.13		Pajaro.....	81	55	63.3	0.00
California.						Paso Robles.....	101	47	71.5	0.00
Alcade.....	110	65	85.7	0.00		Petaluma.....	94	51	66.1	0.00
Alcatraz Island.....	67	50	56.5	0.00		Placerville.....	102	55	74.5	0.00
Almaden.....	95	57	72.2	0.00		Pomona.....	96	64	78.4	0.00
American Hill.....	100	60	71.8	0.00		Porterville.....	110	74	89.9	T.
Anaheim.....	100	63	77.9	T.		Presidio of San F.....	77	47	56.8	0.00
Anderson †.....	110	60	82.7	0.00		Puente.....	103	61	74.9	0.50
Angel Island.....	84	48	61.4	0.00		Red Bluff.....	105	62	81.1	0.00
Aplos.....	85	50	61.9	0.00		Redding.....	105	62	82.0	0.00
Athlone.....	114	60	82.6	0.00		Rocklin.....	108	59	80.8	0.00
Auburn.....	101	59	76.4	0.00		Rumsey.....	105	68	82.9	0.00
Bakersfield.....	111	56	86.5	0.00		Sacramento (1).....	92	45	67.1	0.00
Barstow.....	109	57	85.6	0.13		Sacramento (2).....	94	60	73.6	0.00
Benicia Barracks.....	97	51	70.0	0.00		Salinas (1).....	76	52	58.6	0.00
Berendo.....	110	60	82.6	0.00		Salinas (2).....	73	52	60.0	0.00
Berkeley.....	79	51	56.4	0.00		Saltton.....	117	74	95.6	0.30
Bishop Creek.....	109	73	87.6	0.00		Sanger Junction.....	110	67	86.3	T.
Borden.....	111	60	81.6	0.00		San Ardo.....	106	52	69.6	0.00
Brentwood.....	102	62	79.5	0.00		San Diego B'ks.....	89	63	72.0	0.04
Brighton.....	106	59	77.2	0.00		San Fernando.....	108	52	80.6	0.06
Byron.....	102	66	79.7	0.00		San Gabriel.....	100	60	76.7	0.89
Cactus.....	122	78	97.4	0.25		San Jose.....	89	52	67.2	0.00
Caliente.....	106	70	85.9	0.00		San Mateo.....	82	50	72.0	0.00
Calistoga.....	102	50	68.6	0.00		San Miguel.....	104	54	73.5	0.00
Castroville.....	73	52	61.2	0.00		San Pedro.....	89	63	74.6	0.00
Centerville.....	96	58	70.5	0.00		Santa Ana.....	100	60	73.7	0.66
Chico.....	115	65	85.1	0.00		Santa Barbara (1).....	91	53	67.3	0.00
Cisco.....	85	45	63.7	0.00		Santa Barbara (2).....	88	60	70.5	0.00
Colgrove.....	.....	.....	.....	0.50		Santa Clara.....	88	47	66.3	.....
Colfax.....	100	59	76.4	0.00		Santa Cruz.....	86	52	65.2	0.00
Colton.....	111	60	80.3	T.		Santa Margarita.....	99	50	72.3	0.00
Corning.....	106	56	82.0	0.00		Santa Maria.....	92	47	65.6	0.00
Crescent City.....	.....	.....	.....	0.10		Santa Monica.....	89	63	70.0	0.11
Davisville.....	107	56	80.5	0.00		Santa Paula.....	82	55	71.8	0.01
Delano.....	108	68	87.3	0.00		Santa Rosa.....	86	65	64.7	0.00
Delta.....	103	54	75.5	0.00		Selma.....	110	68	83.6	0.00
Downey.....	93	59	71.3	0.00		Seven Palms.....	120	75	97.9	0.07
Dunnigan.....	96	58	77.8	0.00		Shingle Springs.....	103	64	80.6	0.00
El Dorado.....	104	62	80.5	0.00		Sims.....	100	48	70.1	0.00
Elmira.....	110	68	76.6	0.00		Sisson.....	98	50	69.5	0.00
El Verano.....	96	50	66.6	0.00		Soludad.....	94	46	61.8	0.00
Emigrant Gap.....	88	51	66.5	0.00		Soquel.....	88	52	66.2	0.00
Esperanza.....	105	55	78.9	0.00		South Side.....	106	56	79.0	0.38
Farmington.....	107	55	78.8	0.00		South Vallejo.....	75	51	60.0	0.00
Felton.....	96	40	65.8	0.00		Spudra.....	109	58	75.6	0.00
Flora.....	93	58	71.2	0.89		Steeles.....	92	48	64.9	.....
Folsom.....	104	58	81.0	0.00		Stockton (2).....	96	58	73.2	0.00
Fort Bidwell.....	95	38	71.0	0.00		Summit.....	98	40	60.8	0.00
Fort Gaston.....	98	36	65.8	0.00		Suisun City.....	103	58	72.7	0.00
Fort Mason.....	75	48	58.7	0.00		Susanville.....	95	49	74.0	0.00
Fresno.....	112	65	85.8	0.00		Tehachapi.....	90	62	78.3	0.80
Fruto.....	109	66	84.5	0.00		Tehama.....	102	65	79.7	0.00
Georgetown.....	97	54	74.9	0.00		Templeton.....	105	49	73.3	0.00
Gilroy.....	100	52	69.1	0.00		Towles.....	94	65	75.3	0.00
Girard.....	100	60	77.2	0.36		Tracy.....	108	62	81.9	0.00
Glen Ellen.....	101	49	67.7	0.00		Traver.....	101	69	83.3	0.00
Goshen.....	108	62	83.5	0.00		Tropico.....	100	53	72.5	0.30
Hollister.....	101	52	68.5	0.00		Truckee.....	90	42	69.2	0.00
Hydesville †.....	76	42	58.4	0.20		Tulare.....	110	65	86.3	0.00
Indio.....	116	80	97.4	0.95		Turlock.....	107	62	82.2	0.00
Ione.....	102	58	75.3	0.00		Vacaville (1).....	103	56	75.5	.....
Jolon.....	109	.....	.....	0.00		Vacaville (2).....	104	57	73.1	0.00
Julian.....	100	61	81.8	0.60		Valley Springs.....	101	65	81.2	0.00
Keeler.....	100	68	80.6	T.		Vina.....	103	59	76.9	0.00
Keeno.....	103	57	76.0	0.28		Volcano Springs.....	126	78	102.5	.....
Kingsburgh.....	100	65	82.7	0.00		Walla Walla Creek.....	92	40	68.8	0.00
King City.....	105	48	65.4	0.00		Walnut Creek.....	102	46	71.5	0.00
Knight's Landing.....	96	60	78.4	0.00		Westley.....	105	60	81.3	0.00
La Grange.....	114	50	83.5	T.		Wheatland.....	102	53	76.1	T.
Lathrop.....	106	38	72.0	0.00		Whittier.....	101	63	76.7	0.95
Laurel.....	101	50	68.6	0.00		Williams.....	112	64	88.2	0.00
Lemoore.....	106	62	83.6	0.00		Willow (1).....	109	52	76.6	0.00
Lewis Creek.....	109	65	86.7	T.		Willow (2).....	109	61	79.7	0.00
Livermore.....	98	50	67.8	0.00		Winters.....	105	61	84.9	0.00
Livingston.....	109	60	82.5	0.00		Canada.				
Long Beach.....	97	63	71.8	0.00		McGill Col. Obser-				
						vatory, Montreal.....	81	50	65.0	2.73